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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, KEVIN M

ART UNIT PAPER NUMBER

2674

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,523

Applicant(s)

KWAG, JIN-OH

Examiner

Kevin M. Nguyen

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim above, it is not clear what the Applicant means "a starting point of the first interval is within 0.5ms-5ms from a starting point of the second interval", i.e., there are three intervals T1 "1~3 μ s", T2 "20 μ s", T3 "40 μ s" in figure 5. In contrast, the specification discloses "if a voltage of 10V or higher is applied, a response speed of less than 1ms is obtained, and if high-speed liquid crystals are used, a reset of less than 0.5ms is possible," at page 15, lines 2-4. This limitation contains various inconsistencies and/or ambiguities so that the Examiner is unable to understand how is a starting point of the first interval within 0.5ms-5ms.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al (US 6,486,864) in view of Yasui et al (US 5,784,039).

As to claims 1 and 5, Nakajima et al teach an active matrix liquid crystal display TFT-LCD associating a method comprising a TFT-LCD panel, a plurality of gate lines 51, a plurality of data line 52, a plurality of liquid crystal capacitors C_{LC} , a plurality of thin film transistors 53, a timing controller (1 field period, write period), a gate voltage sequentially applying a stepped-wave voltage (V_{gh} , V_{gl}), a first interval "first assist signal application period" for converting a pixel grayscale level V_p^n "positive polarity pulse and negative polarity pulse" of a subsequent gate line V_{gn} formed in a previous frame to a first grayscale level, and a second interval "image signal application period" for forming a path through which data voltage V_s is applied by controlling the thin film transistors (53) to ON; and a data voltage V_{lc}^n of a second grayscale level supplied to the LC capacitors of the LC panel according to the control signal of the timing controller (see figures 16 and 17, column 22, line 38 through column 23, lines 54).

Nakajima et al fail to teach a gate driver and a data driver. However, Yasui et al teach a related TFT-LCD which includes a gate driver 3 and a data driver 2 (see figure 1A, column 4, lines 25-30). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the X and Y driver circuits taught by Yasui et al for the X and Y driver circuits disclosed in the TFT-LCD system of Nakajima et al because this would improve the quality of the image being displayed while eliminating display flicker and reducing power consumption (see column 1, lines 6-9 of Yasui et al).

As to claims 4 and 6, Yasui et al teach a third interval " t_7 - t_8 " for applying a voltage of the same polarity as the data voltage (V_s) during a predetermined interval

Art Unit: 2674

before the first interval "t4-t6" and following the turning OFF of the thin film transistors (see figures 2 and 9).

As to claims 2, 3, 11 and 12, Nakajima et al teach the first grayscale level is a black grayscale level when in a normally white mode, the first grayscale level is a white grayscale level when in a normally black mode (see column 13, lines 5-7).

As to claim 7, Yasui et al teach the gate voltage G_{GH} of V_{gi+1} in the first interval "t0-t2" is identical in polarity to a polarity of the gate voltage G_{GH} in the third interval "t3-t4" (see figure 2).

As to claim 8, Yasui et al teach the gate voltage G_{GH} of V_{gi+1} in the first interval "t5-t8" is opposite in polarity to a polarity of the gate voltage G_{GH} in the third interval "t9~t10" (see figure 2).

As to claims 9 and 13, Yasui et al teach the gate voltage taking various values according to the liquid crystal display used (column 11, line 30 through column 12, line 7).

As to claim 10, Yasui et al teach the third interval "t_{off}" starts at a point where the second interval "t6-t7" ends, and converts to a gate-off voltage at a position " Δ_2 " where the second interval "t6-t7" doubles (see figure 9).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamaguchi (US 5,438,342), Takeda et al (US 5,151,805), Kusafuka et al (US 5,995,074).

Art Unit: 2674

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kevin M. Nguyen** whose telephone number is **703-305-6209**. The examiner can normally be reached on MON-THU from 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reached on **703-305-4709**.

Any response to this action should be mailed to:

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Washington, D.C. 20231

or faxed to:

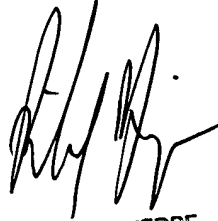
(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Kevin M. Nguyen
Patent Examiner
Art Unit 2674

KN
September 5, 2003



RICHARD HJERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600